Garrett Snuff Mill, 1846
Alongside State Route 82
Yorklyn
New Castle County
Delaware

HAER DE-14

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
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HISTORIC AMERICAN ENGINEERING RECORD

Garrett Snuff Mill
HAER DE-14

Location:	Alongside State Route 82 in Yorklyn, Delaware (on Red Clay Creek). UTM: 18.442300.4406550 Quad: Kennett Square
Date of Construction:	1782 (Oldest extant structure-1846. Several major additions.)
Present Owner:	Yorklyn Mushroom Company Don Lickle, Barley Mill Realty
Present Use:	Structures occupied. Various agricultural, industrial, and commerical uses.
Significance:	The founding of the Garrett Snuff Mills represented the continuance of a 50-year tradition of Garrett enterprises on Red Clay Creek. Garrett's mills spanned the first two centuries of American industrial development--and they now serve as an interesting case study which documents that development.
Historian:	Bruce E. Seely, 1976.

Taking snuff--by inhaling or dipping--is one of the oldest means of using tobacco. Europeans imported the practice from the New World. For over a century, until circa 1825, inhaling snuff was in vogue and practiced by high society in England and Europe. In America, inhaling snuff was never a popular habit. American users have always preferred to dip their snuff. [1] As current television commercials proclaim, dipping is a simple procedure--"You just put a little pinch between your cheek and gum." [2]

Snuff-taking originated in the New World, as did much of the product. It is possible that the first snuff manufactories were established in Virginia by 1732. [3] Certainly there was a mill operating in Rhode Island by 1751, [4] and in 1760 Pierre Lorillard opened a tobacco shop and mill in New York City. In 1782, John Garrett, Jr. started a snuff mill in Yorklyn, Delaware. His mill, modified many times, continued to produce a variety of snuff until 1954. Because of its long life-span, the Garrett mill serves as an important case study of the development of a little-examined American industry.

Company History

Yorklyn was, and remains today, a small community on Red Clay Creek in the northwestern corner of Delaware. Snuff was not the first product to be milled here. In 1731, John Garrett, Sr. started a gristmill and sawmill in Yorklyn, which his son ran after 1749. [5] But the increasing dominance of Wilmington's commercial flour mills limited the Yorklyn mill's future, so John Garrett, Jr. diversified. In 1782 he built a snuff mill across from the older flour mill. [6]

Today there is no way to tell what this snuff mill looked like, or even where it was located. It is quite possible that the mill, undoubtedly wooden, [7] stood on the site of an extant mill erected in 1846, and that its machinery was powered by water drawn from Red Clay Creek in a still-existing raceway. John Garrett ran this mill until 1804, when he sold it to his son Levi. By this time, the business was well established, as evidenced by data contained in company day books which survive for the period of 1795 to 1807. C. A. Weslager discovered these day books in the Historical Society of Philadelphia.

The day books show that Levi Garrett established a store in Philadelphia to sell his product. As long as the Garrett family owned the mills, the company stored and ground its tobacco in Yorklyn, and then transported its snuff to a Philadelphia store and warehouse for storage, packing, and shipping. Account books list shipments at the turn of the century to Washington, Georgetown, Alexandria, Baltimore, Pittsburgh, Erie, Hartford, Camden, Wilkes Barre,

New York and a number of places in Delaware, including Wilmington, Milford, Milltown, Port Penn, Dover, and Broadkill. [8]

The firm experienced continued success in the early part of the century, due partly to the introduction of labor-saving machinery, such as a machine patented on 22 June 1819, by Thomas Baldwin. Baldwin's machine (unfortunately of an unknown type) supposedly allowed one man to do the work of three. Levi Garrett apparently installed this labor-saving machinery in advance of other snuff millers, thereby gaining a competitive edge. [9]

In 1833, Levi died and bequeathed the mills to his sons. William E. Garrett bought out his brother, and the company took William's name. A long period of growth ensued, and William E. Garrett expanded the physical plant and production. The first mention of any building other than the original 1782 wooden mill can be found in an 1837 Assessment List for Christiana Hundred, which notes that William Garrett was assessed for a stone mill. Like its predecessor, this stone mill no longer exits. The earliest structure still standing on the Garrett site is a stone mill bearing an 1846 datestone set in the southwest wall. [Photos DE-14-1, 2, 15] Originally three stories high, [10] a fourth floor was added to the mill after other four-story mills had been erected on the site. The 1846 mill was designated by the company as Mill 1.

Only three years after Mill 1 was erected, Garrett built another mill a short distance downstream. Going by a later numbering system, the company called this building Mill 4. [Photos DE-14-16, 17] A 4-story stone structure, [11] the building measured 60 feet by 60 feet. William Garrett seems to have used a standard plan for his early mills, because Mills 1 and 4 were the same size, and a later addition, discussed below, was also 60 by 60. [12]

For two decades following 1849, William Garrett initiated no new construction at the snuff mills. He did, however, have to rebuild Mill 1 in 1858, after it was gutted by a fire. [13] This 20 year period of relative quiet was broken in the early 1870s when William Garrett began a major construction program. First came the enlargement of Mill 1 and the installation of a steam engine there. [14] Only two years later, the company added a 4-story stone building (later called Mill 2) which abutted Mill 1. Mill 2 was the third building in the Garrett mold; it measured 60 feet by 60 feet. In 1877, fire gutted both Mill 1 and Mill 2. Wilmington's Every Evening reported as lost, ". . .the old mill, a three story stone structure and a stone addition erected about three years ago." [15] The paper also noted the loss of a new Corliss steam engine. By the mid-1870s, the Garrett mills apparently had outgrown the water power available from Red Clay Creek, and so the company turned to steam. Water power was not abandoned entirely, however, As late as 1900, a water turbine supplied power when a mill engine broke down. [16] [Photos DE-14-3, 4]

The 1877 fire caused between $50,000 and $75,000 damage, which was repaired within the year. [17] Prosperity and expansion continued, and in 1881 the company enlarged Mill 4 and installed a steam engine. The company needed the engine because tailings from a kaoline mine had filled the pond and clogged the race, lessening the available water power. The addition to Mill 4 doubled the size of that building to 60 by 120 feet. [18]

In the early 1880s, William E. Garrett's sons (William E., Jr., and Walter) were taken into partnership, and the name of the firm became William E. Garrett and Sons. In 1884, the company built a fourth mill, designated by a later numbering system as Mill 3. [Photos DE-14-5,6] This building departed from the plan of the earlier mills. It was brick, not stone, and rectangular instead of square. The four-story building was much more elaborately ornamented than its predecessors. Its pilasters, buttressed corners and dentils stood in marked contrast to the white-washed stucco and stone of the earlier mills. Mill 3 was directly connected with Mill 2, simply by breaking through the walls. Mill 3 had a gambrel roof matching those of Mills 1 and 2. The gingerbread above the dormer windows, however, varied from mill to mill.

1884 was an important year for the company. Not only did the company open [19] a new mill; it opened Warehouse "A" in Yorklyn. [Photo DE-14-7] Like all structures it built after 1884, the company used the style of Mill 3 as a model in designing Warehouse "A". The two structures exhibited similar ornamentation. In 1884, another important event occurred--a railroad spur finally entered the yard. [20] In 1872, the Wilmington and Western Railroad had reached Yorklyn, largely through the efforts of William E. Garrett, one of the line's major boosters. [21] But it was not until 12 years later that the company built a trestle over Red Clay Creek to carry tracks into the millyard and up to the platform around Warehouse A.

A major problem attended the expansion of the company after the Civil War--an inadequate labor supply. [22] To remedy this problem, the Garretts resorted to company housing as an inducement to potential laborers. It is impossible to date all the housing that the company scattered on the flatland and the hillside north and east of the mill.[23] Most of the 35 units were duplexes. The housing group closest to the mill, just off Route 82, comprised "Lower Snuff Mill Row," where eleven tenants lived in five duplexes and a single family dwelling. Three duplexes constructed of stone and stucco stood just up the road from Lower Snuff Mill Row. These were nicer dwellings for management personnel and formed "Stone Row." On a hillside above Stone Row the company built four more duplexes called Upper Snuff Mill Row. The last group of ten houses, called "Polish Row," stood further up the hill from the Upper Snuff Mill Row dwellings. [Photo DE-14-8] The Wilmington Board of Trade Journal may have been referring to Polish Row in a 1901 article that

noted the company's intention to erect ten new dwellings. If this is the case, Polish Row was the last company housing built by Garrett.

William E. Garrett died in 1885, leaving the thriving concern to his sons. They slowed the expansion of the site, adding only Mill Annex 1, in 1893. [24] This annex looked like a miniature version of Mill 3, as the 1884 mill again served as a pattern. Walter Garrett died in 1895, and his brother, William E., Jr., soon decided to get out of the business completely. He generously sold the concern to three trusted employees for a dollar. But before selling, he constructed Buildings "B" and "C" in 1896. [25] [Photo DE-14-9] These structures may have been warehouses at first, but they became packing and shipping buildings. The company's office was located in the east end of Building B.

William Garrett had hoped to keep the mill in private hands when he sold the mill. But this was the era of the tobacco trust ruled by James Buchanan Dukes' American Tobacco Company. A subsidiary monopoly of the trust, the American Snuff Company, was busily acquiring control of snuff production. By 1906, 23 percent of the country's snuff came from the trust. In 1900, the Garrett labels passed under the umbrella of the trust, and in 1907 outright ownership of the mills went to American Snuff. [26]

The era of the trust became the highwater mark of the Garrett mills. In 1901, the company built Mill 5 directly east of the rest of the complex, where it stood alone along Red Clay Creek. [Photo DE-14-10] This brick structure measured 125 feet by 85 feet. It was five stories high and had timber beams, joists, and trusses like every other building on the site. Like Mill 4, it housed a self-contained milling operation with all of the necessary machinery. Power came from a 55 horsepower Corliss engine built by the Remington Company of Wilmington; [27] it was housed in a shed against the mill's northeast corner. Another addition built onto the east end of the structure served as a dry kiln. [28] Today, holes in the brick trace the line of the demolished kiln's roof joists. [Photo DE-14-11]

1901 also saw a small brick building go up to house the machine and carpenter shop. [29] The company built a number of other structures at about this same time. Near the main mill buildings stood a new boiler room and engine house, along with a 50 foot draft stack; the engine drove machinery in Mills 1, 2, and 3. Two other warehouses were built during the first decade of the century. Warehouse "D" stood next to "A" (along the railroad siding), and Warehouse "E" stood across the race from Mill 5. [Photos DE-14-12, 18] The company constructed the warehouses of brick. Other structures completed before 1912 included a wood-framed clubhouse for the workers' entertainment and a 50,000 gallon water tank for the sprinkler system. A small building identified on a 1927 Sanborn Insurance Map as a paint shop [30] served later as the Yorklyn Post Office. [31] A brick and iron addition to Mill 2, now destroyed, once housed kilns for the

main mills. A garage, a small blacksmith shop, and two coal trestles rounded out the company's physical plant. [32]

The production of snuff at Yorklyn increased dramatically under the trust. In 1871 weekly production reached 16,000 pounds, [33] providing for an annual output of some 800,000 pounds--or about 2 percent of the total United States production of 3 million pounds. [34] In May 1901, the Wilmington Board of Trade Journal reported that the Yorklyn plant produced one-quarter of the country's total snuff, [35] or approximately 3.5 million pounds. The Board of Trade Journal boasted that the mills were the largest producers of snuff in the world. [36]

A major decline, however, was just around the corner. In 1911, the Supreme Court broke the snuff trust into thirds. The George W. Helme Company received the Garrett mills, but the now reduced American Snuff Company maintained the Garrett trade marks. [37] In 1912, Helme sold Mill 4, and in 1920, Mill 5. From that time until the 1950s, the company produced snuff only in mill buildings 1, 2, and 3. By the 1950s, the out-dated machinery in Yorklyn produced a product that could not compete in the marketplace, and Helme closed down the Garrett Mills. (Helme continued to operate its main plant in Helmetta, New Jersey.) [38] The Yorklyn plant had produced only 2 million pounds of snuff a year after 1945, or only 5 percent of the country's total. [39] It machinery dated to the 1880s and modernization was not considered. Helme stopped operations on October 1, 1954. It laid off 75 men, scrapped the machinery, and sold all the structures. [40]

In 1976, the buildings remained remarkably intact and were used by a number of companies. After occupation by a planetarium builder and an aluminum boat builder, Buildings B and C and other small structures were occupied by a fiberglass and insulation company. National Vulcanized Fiber still owned and used Mill 5, which it had purchased in 1920 as a warehouse. Another concern converted the actual warehouses into mushroom houses, and some craftsmen had moved into Mills 1, 2 and 3.

The Production of Snuff

Just before the Garrett Mills closed in 1954, their method of production differed little from that of the 1880s. An oral interview with Donald Potter, a snuff miller who worked in the mills at the time they closed, proved helpful in documenting a step-by-step procedure for snuff manufacture. By noting procedures which Mr. Potter knew to have been replaced, and by filling gaps with information from similar manufacturers, a detailed picture of snuff making over the 19th and 20th centuries can be drawn. This account will describe snuff manufacturing from the vantage point of 1954, but earlier processes and machinery will also be noted.

It should be noted that there are a number of types of snuff,

divided into three main categories: dry, moist, and semi-moist. These, in turn, are subdivided into fine or coarse, toasted or flavored, plain or scented. Each variety is produced in a slightly different manner. Moist and semi-moist snuffs are actually finely cut tobacco, not pulverized. Usually these types are flavored and scented. Rappee, Irish and Maccoboy are three such types. These snuffs appeared solely for dipping in the early 19th century. The original finely-milled snuff was dry, called Scotch snuff--an unflavored, unscented, powdered tobacco. Some kinds, called sweet Scotch, were lightly flavored. [41] The Garrett mills produced only Scotch snuff.

The first step in snuff production took place far from Yorklyn: the acquisition of proper tobaccos. Contrary to some accounts, snuff companies paid as much attention to choosing the proper leaf as did cigar or cigarette manufacturers. A detailed description of snuff making, dated December 25, 1839, demonstrates the care taken to obtain the right tobaccos: [42]

> Take two thirds Kentucky tobacco, and one third Virginia tobacco. Buy the leaf that is not too ripe. Get it of as small stem as possible. The tobacco dealers know the kind of leaf tobacco suitable for snuff. Don't touch an overgrown, too ripe leaf and be sure to get that which is sweet as possible and which has gone through one summer's sweat sweetly, that is retaining its sweetness and not becoming rank and hard in its flavor. Try to get tobacco that has been inspected in New Orleans and marked F with an iron on the side to show it is first. Then you will find the tobacco to be uniform in quality in that third. Try to select tobacco that curls close around the stem and which is hard and firm. Avoid flabby and sticky and flat leaf which is too soft for snuff. If Virginia tobacco meeting these requirements is not obtainable, then use all Kentucky leaf. [43]

Tobaccos from Virginia, Kentucky, and Tennessee have long served as the basis for all snuffs. Both the Garretts and the Helme Company bought tobacco from these states.

After purchase, the tobacco was carefully aged, almost always in the hogshead:

> Before tobacco is made into snuff it ought to be two years old, that is it should have gone through two summers' sweats and to have had all the sap or resinous matter in the leaf and more particularly in the stem sweated out so that the stem will break off short like a pipe stem. After buying it, it should be stored in such a manner that it will not go back in quality and deteriorate. It should not be stored in a damp or confined cellar or stored where there is not constant ventilation. The best place is under a large outdoor shed,

> roofed perfectly tight and large enough so that no rain or bad weather can reach the third. Under such a shed the air can act on the tobacco constantly. The object is to allow your leaf to obtain age as it has to be cured. If it is a new leaf, the sap in it causes it to heat too highly during curing and this produces a strong rank and bad flavor, very unfavorable for delicately flavored maccoboy snuff. [44]

Helme always stored its tobacco for two to three years in warehouses at their leaf-rehandling facilities in Lynchburg, Virginia and Hopkinsburg, Tennessee. [45] C. A. Weslager noted that the Garretts had stored tobacco in sheds. Where these sheds stood in Yorklyn was not made clear. [46]

When partially aged tobacco, still in 1800-pound hogsheads, was shipped by rail to Yorklyn, it was unloaded at the platform in front of Warehouse E. Trolleys inside the building ran down every aisle. This rail system carried a chain hoist and clamps to lift the big barrels of tobacco. The hogsheads were ricked (stacked) eight or nine high in long rows. This way, some 2 million pounds of tobacco could be stored in this building. This second aging lasted up to another year. [47] Don Potter remembered that an average of two boxcars were unloaded each week. [48]

Before the railroad reached the mills in the 1870s, horses and wagons carried the hogsheads from ports on the Delaware River. [49] Before the company built the big warehouses, no doubt the upper floors of the mills were used for storage.

After the tobacco had aged sufficiently, the actual milling process began. Men pushed the hogsheads on a small flatcar from Warehouse E to the platform around Warehouse A. Then they rolled the barrels to the southwest ground floor entrance of Mill Annex 1. [50] Once the barrel was inside the mill, men removed the tobacco from the hogshead. This often proved to be an arduous task, because years of aging could turn the tobacco into a hard mass. At times workers had to break the hogsheads apart to get the tobacco out. [51]

After opening the hogsheads, workers selected the proper blend of leaves to get the proper taste. [Photo DE-14-19] This blending process always remained a closely guarded secret. Some sources say that snuff formulas included tobacco stems, used to lower costs, [52] while others advised the removal of the stems with a hatchet. [53] However mixed, the blend of tobacco went next to the chopping machine, which in 1954 was on the first floor of the mill. This machine looked very much like the one shown in Photograph DE-14-20 (a converted alfalfa chopper with a spiral lawnmover type blade, used in the Byfield Snuff Company, Byfield, Massachusetts). [54] [Photos DE-14-21,22] However, this type of chopper was the last cutter used at Yorklyn. Prior to its installation, workers pulled or chopped the tobacco into "hands" or groups of leaves. Then they fed the "hands" into

the "picker"--a roller with teeth--which chewed the leaves into two inch pieces. [55] Before machines were available, chopping was a slow process utilizing a hand axe. But as early as 1840, some companies had mechanical choppers. [56]

After cutting, workers sprayed the chopped leaves with a saltwater solution. Mr. Potter said the leaves were sprayed as they came out of the chopper. The wet tobacco rode a bucket elevator to the fourth floor, where the curing process took place. Proper curing was crucial to the production of good snuff. The tobacco fermented (much of its gum and resin dissipated), and this developed the final products of "strength and quality." [57]

Four large curing bins, arranged like stalls in a barn, divided the fourth floor in Mill 1. Workers piled the moistened leaves inside the bins. Then once a week for three weeks, they overturned the tobacco with long-handled forks and repiled it at the other end of the bin. After three "overhaulings," the tobacco went back into hogsheads for an additional cure of four to five weeks. [58] During this time the casks remained on the third and fourth floors of Mills 2 and 3.

Bin-curing was adopted at Yorklyn only after 1950, but the process was much older than that. An 1839 manuscript described the bin-curing of maccoboy snuff:

> One should have 12 bins each like a horse's stall, about six feet high with boards put across the center to make two floorings to divide the cure, putting one third on each flooring, so as to have its own boarding separated from the other bin by four inch joists between each bin. This will allow air circulation. . . .Planks and not boards must be used to make the bins. There should also be a strip of plank six inches wide, the length of each bin, to put on top between any two bins to prevent the leaf from falling between the bins and turning the cure from one bin to another. [59]

The bins were whitewashed; lime in the wash kept the pine flavor out of the cure. [60]

The 1839 account, which presumably concerned Pierre Lorillard's snuff manufactory, describes how workers knew when to overhaul the curing tobacco. A nut wood stick, three and one half feet long and one and one half inches in diameter, stripped of its bark and having a sharp point, was inserted into the pile. Then,

> as soon as your cure begins to get into a heat [begins to ferment], by drawing out this stick and smelling along its length, beginning at the bottom, you can accurately ascertain the true state of the cure and know when to turn it by the quantity of heat and kind of flavor in it. [61]

Workers turned the tobacco three times, for the anonymous 1839 author noted, "According to Lorillard's man, three turnings were necessary to keep the snuff made of it from spoiling in the jar." [62]

At Yorklyn, bin-curing replaced an older method that apparently dated from the founding of the Garrett snuff mill. Before 1950, when wet tobacco came out of the picker it dropped down a chute to the first floor and fell into rebuilt hogsheads. After these casks were capped, elevators raised the tobacco back to the top floors of the mills for storage, [63] where it sat for seven to nine weeks in the hogsheads. Timing was crucial, because the goal was to cure the tobacco enough to be mild, but no so much that it lost its "bite." As C. A. Weslager noted, "Experience and intuition counted most" [64] in telling when the tobacco was ready.

At least once, and as many as three times, workers removed the tobacco from the hogsheads, aired it, and returned it to the cask, sometimes after further moistening. This overhauling procedure was one of the worst jobs in the mill. The fermenting tobacco released a nauseating odor and a noxious gas. [65]

In 1976, both the Byfield Snuff Company and the Helme Company bin-cured their tobacco, and their system differed little from that used in 1839 by Lorillard. Helme gauged the cure with a thermometer instead of a nut wood stick, and it overhauled the tobacco with a front end loader instead of with pitch forks. [66] But curing remained an intuitive process. Benjamin Pearson, proprietor of the Byfield Snuff Company, said that he stops the curing process "when he feels it is right." [67]

After curing [Photo DE-14-24], the chopped leaves were dried before grinding. The steam-heated dryer at Yorklyn consisted of long cylinders having interior worm screws to move the tobacco. Workers fed tobacco into a cylinder from a hole in the northwest corner of the fourth floor of Mill 2. The dryer inclined downwards along the north wall of the third floor, and then turned down the east wall. While worm screws moved the tobacco, a fan circulated heated air through it. After passing the dryer, the tobacco fell into hoppers on the second floor of the mill. [68]

Prior to the installation of the large dryer in Mill 2, three individual mills in Yorklyn had their own kilns for drying, which appear on the maps in the appendix. [69] The exact appearance and details of the Yorklyn kilns could not be determined, but certainly they differed little from those used by the Lorillard Company in 1868. Those kilns were located in a brick structure called the pan house. Furnaces under the floor furnished the heat, and iron screens supported the tobacco in the drying chamber. [70] After drying, the tobacco was ready to be ground.

A variety of methods have been used to grind or pulverize tobacco. The 1751 Gilbert Stuart mill in Saunderstown, Rhode Island, used a water-powered mortar and pestle. [71] A more common method used upright whell (or edge) mills, such as those shown in Photos DE-14-25 and 26. [72] The Garrett mills originally used this type of machinery: two vertical stone wheels, mounted on a central shaft, which revolved in a hollowed-out basin stone. [73] In 1976, 100-year-old edge mills were still being used by the Byfield Snuff Company. At Byfield, each mill carried four cast iron wheels, and the tobacco passed successively through four mills arranged in a tier. [74] [Photo DE-14-27]

"Mulls" were a second common type of snuff milling machinery. [Photos DE-14-28, 29, 30, 31, 32, and 33] Mulls were large pots, or mortars, inside of which three or four round rollers revolved. The tobacco was ground between the rollers and the mull's corrugated or ribbed lining. The earliest mulls were wooden, but cast iron mulls were available by at least the 1840s. [75] By then, mulls may have replaced the original edge mills at Yorklyn. Certainly they were introduced by 1884 when Mill 3 was built. J. Thomas Scharf must have referred to mulls when he wrote: "The mills are supplied with improved machinery for manufacturing cut snuff, which had a high reputation in the home and foreign markets." [76]

In 1950, the arrangement of the mulls in Mills 1, 2, and 3 probably differed little from the arrangement of the 1880s. The mulls were arranged in sets of 4 around a central shaft, [77] and each mill contained three sets of mulls, or a total of 12. In each mill, the mulls were located along the southern wall of the second floor and occupied a space about 30 feet long and 8 to 10 feet wide. Initially, horizontal overhead line-shafting transmitted power to the vertical shaft which drove a set of four mulls. Large gears, turned by a cog on the central shaft, rotated peripheral shafts which turned the rollers in each pot. But early in the 20th century, Helme dismantled the line-shaft drive to the mulls in Yorklyn and drove the central shafts with electric motors.

By 1950, one eight hour shift worked the mills, and this pattern probably held for most of the mill's history. during a shift, each mull was filled three times with a load of about one and one half barrels of chopped leaf. In eight hours, each mull produced two and one half bags of snuff flour, each weighing 130 pounds. [78]

Snuff flour from the mills was ready for sifting. At Yorklyn, bucket elevators carried snuff flour to a large cylindrical hopper on the fourth floor of Mill 3. A circulating agitator carried off small "bites" of snuff and pushed them down a chute to the third floor, where they fell into bolting reels similar to those used in flour mills. The snuff passed to the inside of rotating reels, slightly inclined, which were covered with a fine cloth or screen. [79] Coarse snuff did not pass through the bolting cloth

It was tailed over by the machines and taken back to the mulls for more grinding. [Photo DE-14-34] The snuff of sufficient fineness to pass through the cloth was carried by worm screws to a chute leading to a semi-automatic bagging machine on the first floor, where 130-pound-capacity canvas bags rested on a spring-loaded platform. When a bag was full, the spring compressed and closed the chute. Men then carried the bagged snuff back to Warehouse A, where it aged three or four weeks before it was packaged.

Before the turn of the century and the take-over of the trust, packaging was one of the most labor-intensive aspects of the Garrett operation. [Photos DE-14-35, 36, 37] Horses and wagons transported the snuff in bulk to Philadelphia where it was hand-packed into a variety of small containers designed to protect the snuff from moisture. In the 19th century, snuff companies such as Garrett hand-packed jars, bottles, ceramic crocks, animal gullets, and beef bladders. It was indeed a laborious task to pack millions of pounds of snuff into containers which held from 25 pounds to only a few ounces of the product. [80]

During the first decade of the 20th century, the snuff trust moved the backing operation from the Philadelphia warehouse to Buildings B and C in Yorklyn, and it installed semi-automatic machinery. After the snuff had aged in Warehouse A, men loaded hand carts with the 130 pound bags and pushed them to Building B. A hoist lifted the bags and dumped their contents into a large hopper at the west end of the structure. The packing machinery drew its snuff from this hopper and filled containers which had come into Yorklyn by rail. (The company manufactured its own labels, but no containers.) After labelling, the containers were packed and shipped. Building C served as the shipping building and provided storage space until the finished product moved to its destination by rail or later by truck.

Conclusion

The history of the Garrett snuff mills presents an interesting chapter in American economic and technological development. On the economic side, the site represents the expansion of one small mill into a factory complex, and the development of a small family firm into a part of a large trust which was ultimately broken by the U. S. Supreme Court. Technologically, the sites speaks of an organization which was initially adaptable and which later failed because of obsolescence. The Garrett mills succeeded in the 19th century because the company kept up with technological change. They finally failed because in their last 40 years of operation, the Helme Company did not renovate an old physical plant.

NOTES

[1] The Snuff Industry (Washington, D.C., n.d.), pp. 1-2.

[2] Television advertisements for United States Tobacco Company, manufacturers of Copenhagen, Skoal, and Happy Days snuff.

[3] The Snuff Industry, p. 2.

[4] Correspondence between B. E. Seely and A. E. Cummings, Curator, Gilbert Stuart Birthplace, 3 August 1976. This museum has an operating mill, dating 1757.

[5] Unless otherwise noted, this information on the early Garrett operation is drawn from C. A. Weslager, The Garrett Snuff Fortune (Wilmington, 1965) pp. 15-49.

[6] The grist mill ran until 1789, when Garrett tried to sell it. Failing, he passed it on to his son as a paper mill. With difficulty, he ran it until 1812, after which it passed through a number of bankruptcies. Today National Vulcanized Fiber's Yorklyn sits on the site of that mill. Weslager, pp. 28-36.

[7] Weslager, p. 44.

[8] Carroll Pursell, That Never Failing Stream (University of Delaware Masters Thesis, 1958) pp. 107, 180.

Pursell also noted that American Watchman, of 11 September 1819 carried notice that Baldwin's improvements were in operation.

Weslager discovered nothing about this machinery, and the patent was lost in one of the Patent Office fires. Weslager, p. 41.

[9] Pursell, pp. 107, 180.

This information was included as an appendix to Pursell's paper in the form of a chronological outline of the significant dates the the mill's history.

[10] J. Thomas Scharf, et. al., History of Delaware, 1609-1888 (Philadelphia, 1888), II, p. 886.

Unless otherwise noted, the dates are drawn from this source. See the maps in the appendix for the locations of the various buildings.

[11] Ibid.

Mill 4 is the only building which no longer survives. In 1912, the Helme Company sold the building to the Crowell Corporation which manufactured gummed cloth tape there until a fire completely destroyed the structure. See photograph and site plan in the appendix.

[12] Wilmington Every Evening, XV, no. 76, 30 March 1881.

[13] Pursell, pp. 108, 181.

[14] Wilmington Every Evening, 5 September 1871, in Pursell, pp. 108, 181.

[15] Wilmington Every Evening, XIII, no. 92, 10 November 1877. p. 3.

[16] Weslager, pp. 43-44.

[17] Pursell, pp. 108-181.
With this reconstruction, Mills 1 and 2 assumed their present form.

[18] "Snuff Mills to be Enlarged," Wilmington Every Evening, XV, no. 76, 30 March 1881, p. 4.

[19] Datestone on northeast wall.

[20] Scharf, II, p. 886.

[21] For the history of the Wilmington and Western Railroad, see Arthur G. Volkman, The Story of the Wilmington and Western (Wilmington, 1963).

[22] Weslager, pp. 35-36.

[23] See appendix maps for locations; information on the housing comes from an HAER interview with Donald Potter, former snuff miller on 10 August 1976.

[24] Datestone on southwest wall of building.

[25] Datestone on buildings, west wall.

[26] Weslager, pp. 47, 169-70.
For more information on the trust, see also John W. Jenkins, James B. Duke, Master Builder (New York, 1927); John K. Winkler, Tobacco Tycoon (New York, 1942); Reavis Cox, Competition in the American Tobacco Industry, 1911-1932 (New York, 1933); and Maurice Corina, Trust in Tobacco (New York, 1975).

[27] Wilmington Board of Trade Journal, III, no. 12, March 1902, p. 2.

[28] "Six Story Snuff Mill," Wilmington Board of Trade Journal, III, no. 7, October 1901, p.7.

[29] 1912 Survey of George W. Helme Company; see appendix for tracing of this map.

[30] Datestone on south side of building.

[31] HAER interview with Donald Potter, former snuff miller. Hereafter cited as D. P. interview.

[32] 1912 Survey, see appendix.

[33] Pursell, pp. 107, 180; also Weslager, p. 41; from Wilmington Every Evening, XVIII, 5 September 1871.

[34] See Table I.

[35] Wilmington Board of Trade Journal, III, no. 2, May 1901. p. 1.

[36] Ibid., IV, no. 9, December 1902. pp. 4-5.

[37] Weslager, p. 171.
In 1966, American Snuff became part of the Conwood Corporation, which still uses the Garrett labels. C. A. Weslager, "Snuff Making, An Early Delaware Industry," Delaware Today, January 1976, p. 54.

[38] Wilmington Journal-Every Evening, 18, no 50, 1 March 1950. p. 2; and Ibid., 22, no 156, 2 July, 1954. p. 1.

[39] Ibid.,18, nol 50, 1 March 1950. p. 2.

[40] Ibid., 22, no. 156, 2 July 1954. p. 1.

[41] The Snuff Industry, pp. 3-4.

[42] Harry B. Weiss found this account in the Arents Collection of the New York Public Library, Accession Number 5857. It is a manuscript with directions and recipes for the making of snuff dated from 1825 to 1843. Although unsigned, it had to have been kept by someone associated with the Lorillard Company of New York City, one of the earliest snuff makers.
Pierre Lorillard founded the concern in New York City in 1760, and it made snuff until the brands were taken over by the George W. Helme Company in the later 19th century. Lorillard built a wooden mill in the Bronx in the 1790s, and replaced it with a stone mill in 1840, which still stands in the Botanical Gardens. From the size of the mill, it seems apparent his operation could have differed little from that of John and Levi Garrett. The descriptions in this booklet certainly shed light upon the milling practice of the Garrett Mills. Harry B. Weiss and Grace M. Weiss, The Early Snuff Mills of New Jersey (Trenton, 1962). pp. 26-37; and Robert Heismann, Tobacco and Americans (New York, 1960). p. 193.

[43] Weiss, p. 26.

[44] Ibid.

[45] "If You Get It Right, The Chances Are You Will Get Right," Centennial Pamphlet of the Helme Company's Railroad Mills, 1925.

This little pamphlet showed the company's tobacco storage warehouses in Hopkinsville, Kentucky, and Lynchburg, Virginia. The Wilmington Journal-Every Evening, noted that Helme was still getting its tobacco from these areas in 1950 (1 March 1950, p. 2). Weiss noted that the Helmetta plant retained this source in the later 1950s (Weiss, p. 79) and still used the same tobacco in 1976. (Author's visit, July 1976.)

[46] Weslager, p. 49.

[47] Warehouse D may have been used for tobacco storage as well. Such was indicated in the 1927 Sanborn Company Insurance Atlas of Wilmington, plate 249. Perhaps this building was unneeded after the company sold mills 4 and 5, for Don Potter remembered that the building was used only for maintenance and equipment storage. (D. P. Interview) It is not clear just what purpose Buildings B and C served before packing machinery was installed, or just what the company stored in Warehouses A and D. Certainly aging tobacco was one item, before Warehouse E was built.

[48] D. P. Interview. This and all of Mr. Potter's descriptions are informative about the last days of the plant. Again, it must be emphasized that the processes and machinery changed very little between 1880 and 1950.

[49] Weslager, p. 28.

[50] This flat car shows in Photograph DE-14-13.

[51] D. P. Interview.

[52] Weslager, p. 42.

[53] Weiss, p. 27.

[54] This picture is courtesy of Benjamin Pearson IX, who owns and operated the Byfield Snuff Company in Byfield, Massachusetts. This plant consists of two mills. One building was converted from a bog iron works to snuff milling in 1804, but is no longer used. The other structure housed a sawmill until 1865. Field photographs of this site provide illustrations showing machinery similar to what must have been in the Garrett mills. The Byfield Company is worthy of a survey of its own. Further references will be made to this company below.

Mr. Pearson still uses the converted alfalfa chopper to prepare his tobacco for grinding in his water-powered mills.

[55] D. P. Interview.

[56] Weiss, p. 27.

[57] Weslager, p. 42.

[58] Weiss, p. 27.
The Byfield Company still uses this open curing process, turning the tobacco with long-handled forks.

[59] Weiss, p. 32.

[60] Ibid., p. 29.

[61] Ibid., p. 31.

[62] Ibid.

[63] Weslager, p. 42; D. P. Interview.

[64] Ibid., p. 43.

[65] Don Potter said that he regularly left work feeling ill during the summer months due to the stench of the curing tobacco. He rated overhauling as one of the worst jobs in the mill. The smell was horrendous; it made the eyes water and "opened up your head."

[66] Author's visit; see photograph.

[67] Author's visit, 21 July 1976.

[68] D. P. Interview.
Field photographs show the snuff toaster which was used at the Byfield Company to produce toasted Irish snuff. Although smaller in size, it resembled the dryer at Yorklyn. The only difference is that the whole drum revolved at Byfield while just the worm screw moved at Yorklyn.

[69] 1912 Survey, see Appendix.

[70] Weiss, p. 64.

[71] Personal correspondence, A. E. Cummings to B. E. Seely.
In England, some snuff mills used ball mills. They loaded 50 pounds of tobacco into a drum mounted on trunions which rotated on its horizontal axis. A number of metal balls of various sizes were placed in the drum with the tobacco. The drum was sealed and run for eight hours. See "The Snuff Specialists," Brun Educational Films, available through the Early American Industries Association.

[72] E. R. Billings, Tobacco: Its History, Varieties, Culture Manufacture, and Commerce (Hartford, 1875; Wilmington, 1973). p. 240.

[73] Weslager, p. 43. Photograph shows a copy of stone roll wheels used in the E. I. duPont gunpowder mills which must resemble those used in the early Garrett mill.

[74] Author's visit. See field photographs.

[75] Mr. Pearson claimed that the iron mulls located at Byfield were installed in the 1830s or 1840s and Peter Malloy, Curator of the Merrimac Valley Textile Museum concurred with these dates.

[76[Scharf, II, p. 886.

[77] Groups of 4 mulls seem to have been common. Both Byfield and Garrett used this arrangement. But in Helmetta, 6 mulls were arranged around a central shaft.

[78] All of the material on the actual operation of the mills came from Don Potter.

[79] In Byfield, a 65 gauge wire mesh screen was used. Lorillard in 1828 used bolting cloth with 13 by 23 threads per inch for Scotch snuff.

[80] The Garrett account books for 1795 to 1807 show that the company shipped snuff in both animal gullets and beef bladders. Before they were used, these materials were steams and colored.

In 1860, Pierre Lorillard packed one million pounds of snuff in 41,875 stone jars of 4, 8, 15, and 25 pounds, and in 3 million bottles, many weighing about 8 ounces.

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BOOKS

Billings, E. R., Tobacco. Hartford, 1875; reprinted Wilmington, Scholarly Resources, Inc., 1973.

Very limited material. Shows an early wheel mill.

Garner, Wightman W., The Production of Tobacco. Philadelphia, The Blakiston Company, 1950.

Modern production information, and a chart of total U. S. production since 1880.

Morrow, J. V., Snuff: History, Mystery, Facts and Philosophy. United States Department of Agriculture, n.d.

Only information of value is the chart of production totals.

Scharf, J. Thomas, et. al., History of Delaware, 1609-1888. Philadelphia, 1888.

Summary of the firm's development through the 19th century.

Warner, Carl Avery, Tobaccoland, New York, The Tobacco Leaf Publishing Company, 1922.

Of little value.

Weiss, Harry B. and Grace M., The Early Snuff Mills of New Jersey. Trenton, New Jersey Agricultural Society, 1962.

A vital book for information in this field. Excellent data and very well-researched. Makes use of some extremely interesting primary sources.

Weslager, C. A., The Garrett Snuff Fortune. Wilmington, The Knebels Press, 1965.

Good summary of the history of the mills. Concerned primarily with the disposition of the family fortune, the process of snuff making is dealt with very well. Uses oral interviews with living workers of the mills. In the last 12 years many of those workers have died. The starting point for research on the Garrett family.

SERIALS

Wilmington Every Evening, later the Journal-Every Evening.

Isolated articles contain information on specific happenings at the Garrett Mills.

Wilmington Board of Trade Journal.

Like the papers, isolated numbers have material about the Garrett mills.

MAPS

Sanborn Map Company, Insurance Atlas of Wilmington. Philadelphia, 1927, with many later revisions. Plate 249.

Survey of the George W. Helme Company, 1912.

Courtesy of Don Lickle, current owner of most of the site. Both maps have helpful information about the buildings and appear in the appendix as photocopies.

OTHER INFORMATION

The following is courtesy of Jeanette Cohen,Librarian, American Tobacco Institute, Inc., Washington D.C.

United States Tobacco Company, Background Information; April, 1960; January, 1962.

Some production figures and modern production details.

Tobacco Situation, Economic Research Service, United States Department of Agriculture, March 1975; July 1976.

Lists production figures.

United States Tobacco Journal, January 22, 1976, pp. 17-18.

History of U. S. Tobacco's snuff production.

The Snuff Industry, Washington, D.C., Tobacco Institute, Inc., c. 1959.

Contains information on the manufacture of snuff in modern plants.

Mrs. Cohen also sent a set of photographs which are included in the copy work.

OTHER INFORMATION

Heimann, Robert, Americans and Tobacco, New York, McGraw-Hill, 1960.

Contains only a few tidbits of information on the snuff industry.

"If You Get it Right, The Chances Are You Will Get Right," George W. Helme Company, 1925.

Centennial Pamphlet for the anniversary of the Railroad Mills. Contains little information, but a series of photographs of the company's operations taken about 1910 is extremely helpful.

Pursell, Carroll, That Never Failing Stream. University of Delaware Master's Thesis, 1958.

Quick summary of the Garrett mills. Also has photographs of the mills and a chronological timeline of the site's history.

Schecker, Fred, "Up to Snuff," Lawrence Eagle-Tribune, Prime Time TV Section. Saturday, 1 May 1976, pp. 3, 6.

Summary of the milling procedure at Byfield.

"The Snuff Specialists," Brun Educational Films, Ltd.; obtained through the Early American Industries Association.

Movie pictures the Gawaith Hoggarth, Ltd., snuff milling operation in Kandal, England. Excellent presentation of all facets of snuff manufacture, especially the machinery.

Ward, Bradley, "For Dippers and Sniffers Only," Yankee, February 1969. pp. 84-87.

Weslager, C. A., "Snuff Making, An Early Delaware Industry," Delaware Today, January 1976, pp. 53-54.

INTERVIEWS

Visit to George W. Helme Company, subsidiary of American Cigar Corporation, Helmetta, New Jersey. 21 July 1976.

Tour of plant.

Interview and visit with Benjamin Pearson, owner of the Byfield Snuff Company, Byfield, Massachusetts. 5 August 1976.

Very valuable visit both in terms of understanding the process and seeing the machinery.

Oral interview with Donald Potter, former snuff miller at the Yorklyn plant of the George W. Helme Company, 1948-1954. 10 August 1976.

Excellent source of information concerning the operation of the Yorklyn snuff mills. Was able to provide a building-by-building and floor-by-floor account of the snuff milling process.

TABLE I

Snuff Production of the United States

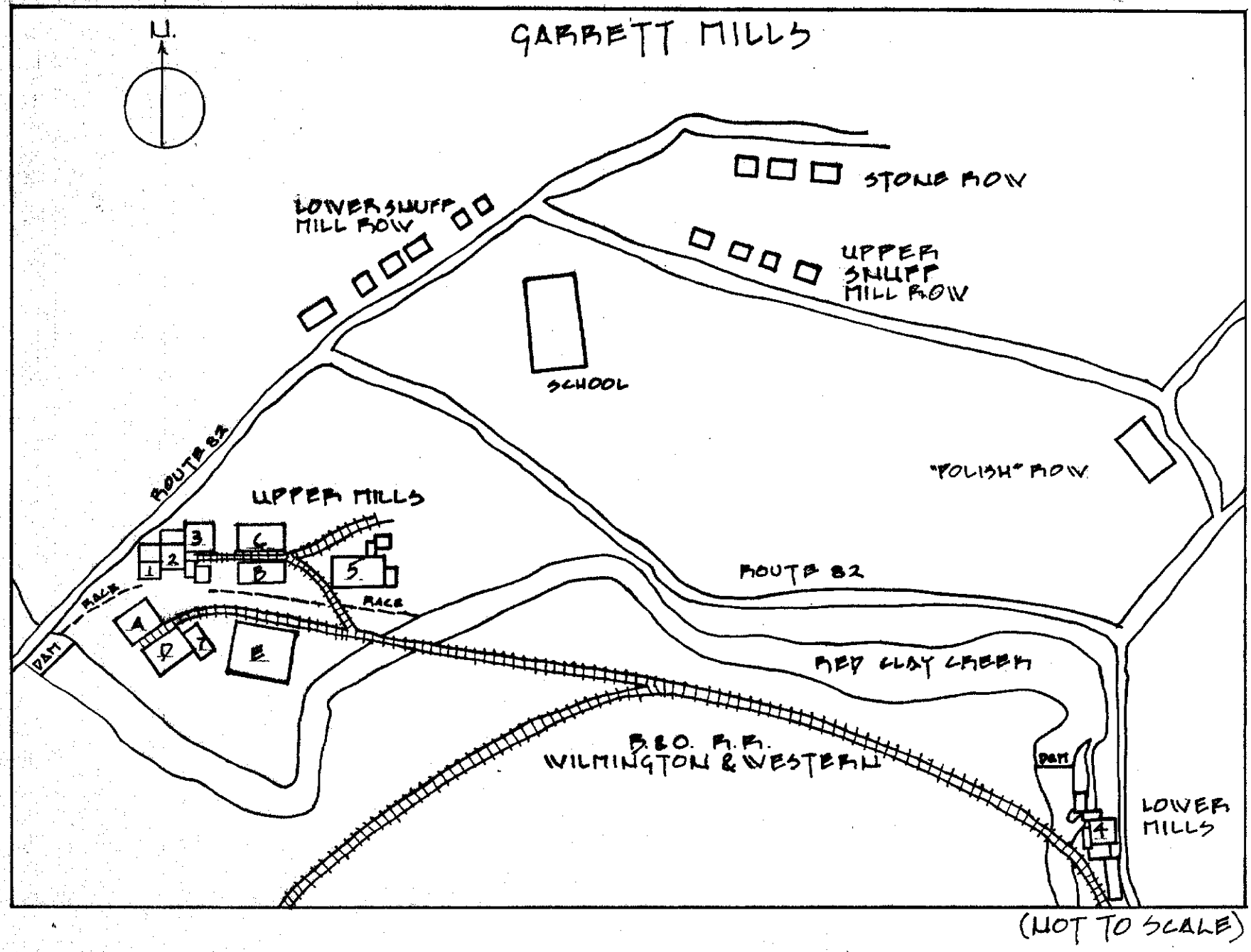
Year	Pounds
1880	3,977,228
1885	6,534,225
1890	9,434,746
1900	13,805,311
1905	23,671,078
1910	31,445,178
1915	31,898,407
1920	34,348,941
1925	37,841,222
1928	40,474,382
1929	41,127,453
1930	40,765,883
1931	39,854,345
1932	36,994,337
1933	36,098,394
1934	36,893,903
1935	36,096,140
1936	38,022,225
1937	37,141,208
1938	37,173,135
1939	37,969,993
1940	37,875,059
1941	39,616,452
1942	41,002,667
1943	43,179,209
1944	41,961,777
1945	43,833,974
1946	39,361,114
1947	39,163,514
1948	40,808,952
1949	40,908,291
1950	39,995,409 [1]
1957	c.39,000,000 [2]
1972	25,500,000
1973	25,300,000
1974	25,000,000 [3]
1975	24,700,000
1976	24,700,000 [4]

[1] J. V. Morrow, Snuff: History, Mystery, Facts and Philosophy (United States Department of Agriculture, n. d.) p. 10.

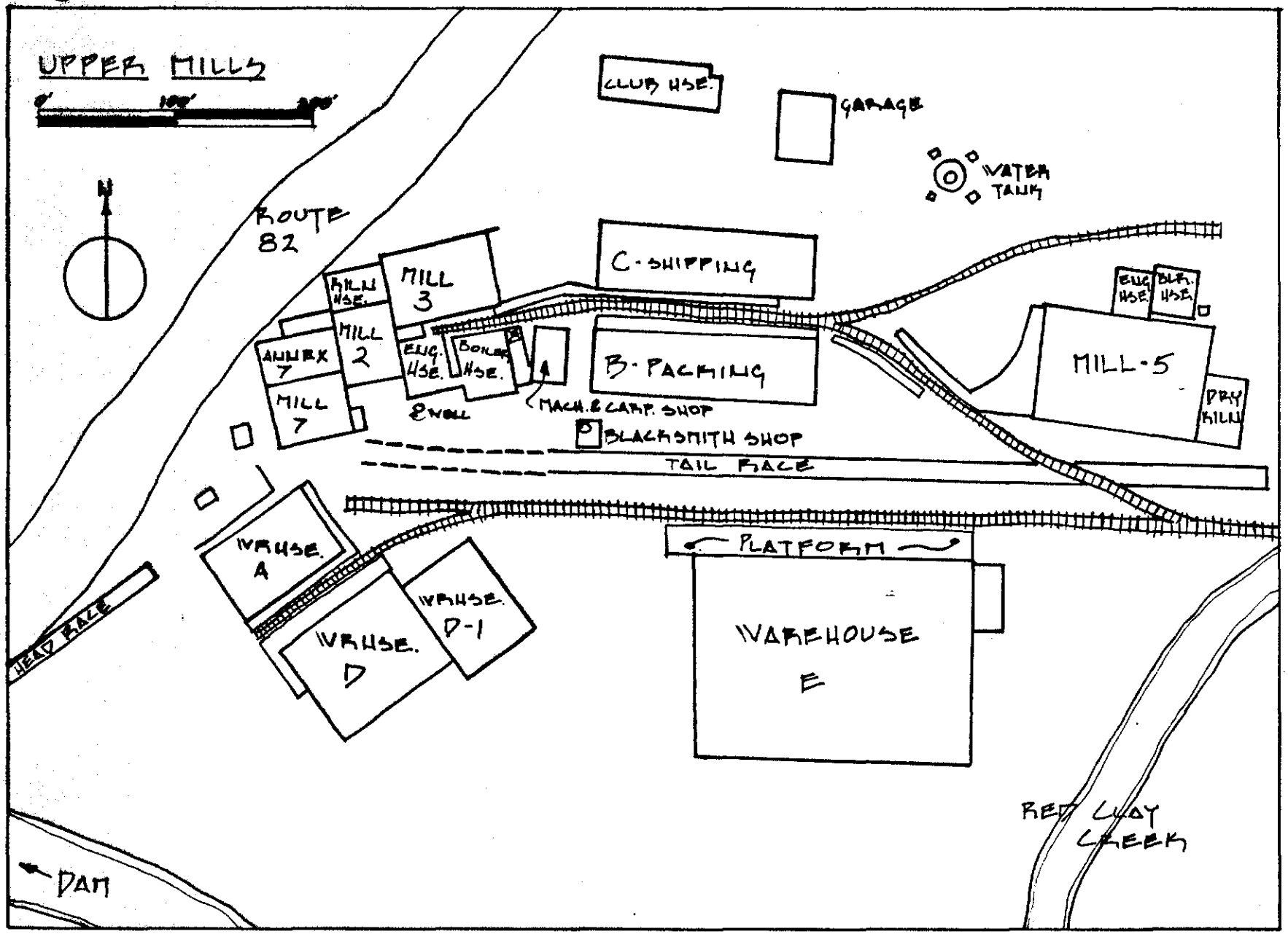
[2] United States Tobacco Company, Background Information. April 1960.

[3] Tobacco Situation, U. S. D. A., March 1975.

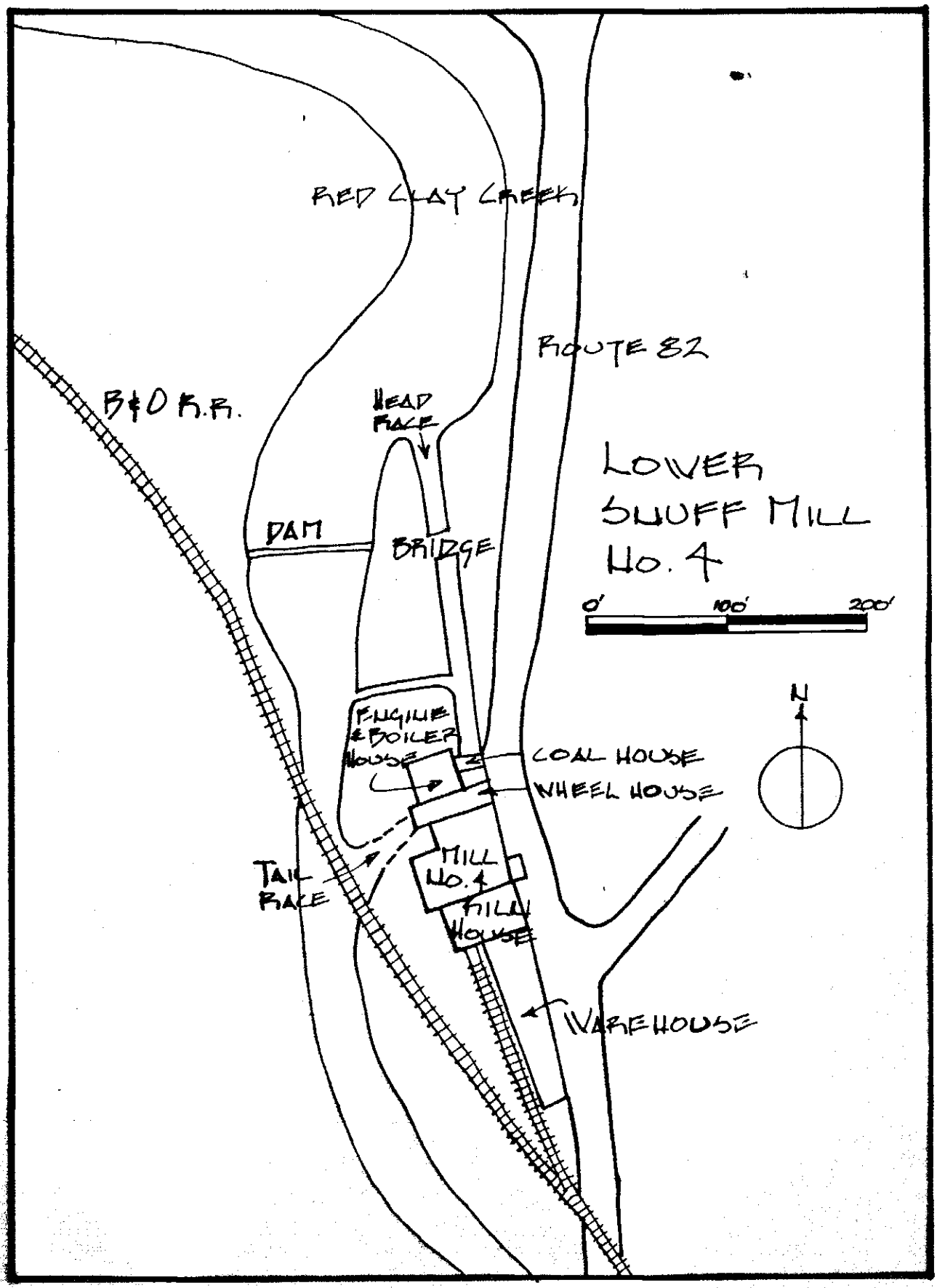
[4] Ibid., July 1976.



GARRETT SNUFF MILLS
HAER DE-14 (PAGE 24)



GARRETT SHUFF MILLS
HAER DE-14 (PAGE 25)


RED CLAY CREEK
ROUTE 82
B&O R.R.
HEAD RACE
DAM
BRIDGE
LOWER SNUFF MILL NO. 4
0'
100'
200'
N
ENGINE & BOILER HOUSE
COAL HOUSE
WHEEL HOUSE
TAIL RACE
MILL NO. 4
MILL HOUSE
WAREHOUSE